



US 20140376460A1

(19) **United States**(12) **Patent Application Publication**
Hooli et al.(10) **Pub. No.: US 2014/0376460 A1**(43) **Pub. Date: Dec. 25, 2014**(54) **METHODS, APPARATUSES AND COMPUTER
PROGRAM PRODUCTS FOR PROVIDING
DYNAMIC UPLINK-DOWNLINK
RECONFIGURATION INFORMATION TO
USER EQUIPMENTS****Publication Classification**(51) **Int. Cl.**
H04L 5/00 (2006.01)
(52) **U.S. Cl.**
CPC **H04L 5/0053** (2013.01)
USPC **370/329**(71) Applicant: **Nokia Solutions and Networks Oy,**
Espoo (FI)(72) Inventors: **Kari J. Hooli,** Oulu (FI); **Esa T. Tirola,**
Kempele (FI); **Timo E. Lunttila,** Espoo
(FI)(73) Assignee: **Nokia Solutions and Networks Oy**(21) Appl. No.: **14/306,569**(22) Filed: **Jun. 17, 2014****Related U.S. Application Data**(60) Provisional application No. 61/836,898, filed on Jun.
19, 2013.(57) **ABSTRACT**

A method provides information to a UE specifying a UL-DL configuration to be applied to the UE. The information is indicative of: (a) a signaling time at which a UL-DL configuration signaling for a new UL-DL configuration is to take place, and (b) an application time at which the new UL-DL configuration is to be applied. This method complements UL-DL configuration signaling by providing more reliable reception of UL-DL configuration information. This indication is performed with smaller signaling overhead compared to conventional schemes and with reasonable complexity on both the UE side and an eNB side.

